

- ▶ PABLO ARRIGHI, RENAN FARGETTON, VINCENT NESME, ERIC THIERRY,
Applying causality principles to the axiomatization of probabilistic cellular automata.
University of Grenoble, France.
E-mail: `pablo.arrighi@imag.fr`.
University of Grenoble, France.
E-mail: `Renan.Fargetton@imag.fr`.
Universität Potsdam, Germany.
E-mail: `vnesme@gmail.com`.
ENS de Lyon, France.
E-mail: `Eric.Thierry@ens-lyon.fr`.

Cellular automata (CA) consist of an array of identical cells, each of which may take one of a finite number of possible states. The entire array evolves in discrete time steps by iterating a global evolution G . Further, this global evolution G is required to be shift-invariant (it acts the same everywhere) and causal (information cannot be transmitted faster than some fixed number of cells per time step). At least in the classical [12], reversible [16] and quantum cases [1], these two top-down axiomatic conditions are sufficient to entail more bottom-up, operational descriptions of G . We investigate whether the same is true in the probabilistic case.